CLAIM AMENDMENTS

Please cancel claims 8, 10, 11, 12, 17, and 20; amend claims 1, 13, 14, 15, 19; and add new claim 21, 22, 23, 24, 25, 26 as follows:

1. (Currently Amended) A multiple modes sensing system, comprising:

an acoustic wave sensor comprising a plurality of sensing components for monitoring a chemical species, wherein said plurality of sensing components is disposed within a cavity formed from a plurality of walls of said acoustic wave sensor, wherein each sensing component of said plurality of sensing components is coated with a differing sensing film; ~~and~~

a plurality of oscillators associated with said plurality of sensing components, wherein each sensing components of said plurality of sensing components is located in a feedback loop with an oscillator of said plurality of oscillators to thereby provide a multiple mode acoustic wave sensor that provides multiple mode frequency outputs thereof<u>; and</u>

<u>a frequency counter that communicates with said plurality of oscillators, wherein said frequency counter is under the command of a processor</u>, wherein a calculated difference among said multiple mode frequency outputs is utilized to promote an increase in sensing accuracy by eliminating responses due to environmental changes other than said monitored chemical species.

2. The system of claim 1 wherein each sensing component of said plurality of sensing components comprises a quartz crystal.

3. The system of claim 1 wherein said multiple modes frequency outputs comprise at least one of the following types of data: flexural plate mode (FMP)

data, acoustic plate mode data, and shear-horizontal acoustic plate mode (SH-APM) data.

4. The system of claim 3 wherein said multiple mode frequency outputs further comprises at least one of the following types of data: amplitude plate mode (APM) data, thickness shear mode (TSM) data, surface acoustic wave mode (SAW), and bulk acoustic wave mode (BAW) data.

5. The system of claim 4 wherein said multiple mode frequency outputs further comprises at least one of the following types of data: torsional mode data, love wave data, leaky surface acoustic wave mode (LSAW) data, and pseudo surface acoustic wave mode (PSAW) data, and at least one multiple mode acoustical vibration amplitude.

6. The system of claim 5 wherein said multiple mode frequency outputs further comprises at least one of the following types of data: transverse mode data, surface-skimming mode data, surface transverse mode data, harmonic mode data, and overtone mode data.

7. The system of claim 5 wherein said at least one multiple mode acoustical vibration amplitude is controlled by said plurality of oscillators.

8. (Cancelled)

9. The system of claim 1 said acoustic wave sensor comprises a SAW sensor.

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Currently Amended) The system of claim 1 wherein said sensing components of said plurality of sensing components comprise electrode materials chosen from among a group comprising at least one of the following metal-nonmetal compounds ~~alloys~~: TiN, CoSi2, and WC.

14. (Currently Amended) The system of claim 1 wherein said sensing components of said plurality of sensing components comprise electrode materials chosen from among a group comprising at least one of the following alloys ~~metal-nonmetal compounds~~: NiCr and CuAl.

15. (Currently Amended) A dual modes sensing system, comprising:

an acoustic wave sensor comprising two sensing components for monitoring a chemical species, wherein each sensing component are disposed within a respective channel within a cavity formed from a plurality of walls of said acoustic wave sensor, such that each of said sensing components is coated with a differing sensing film; ~~and~~

two identical oscillators associated with said sensing components, wherein each of said sensing components is located in a feedback loop with each of said two identical oscillators to thereby provide a dual mode acoustic wave sensor that provides dual mode frequency outputs thereof; and

a frequency counter that communicates with said two identical oscillators, wherein said frequency counter is under the command of a processor, wherein a calculated difference among said dual mode frequency outputs is utilized to promote an increase in sensing accuracy by eliminating responses due to environmental changes other than said monitored chemical species.

16. The system of claim 15 wherein each sensing component comprises a quartz crystal.

17. (Cancelled)

18. The system of claim 15 wherein said sensing components comprise piezoelectric materials chosen from among a group comprising at least one of the following materials: α-quartz, lithium niobate (LiNbO3), lithium tantalate (LiTaO3), Li2B4O7, AlPO4, GaPO4, langasite (La3Ga5SiO14), ZnO, and epitaxially grown nitrides including Al, Ga or In.

19. (Currently Amended) A multiple modes sensing system, comprising:

a surface acoustic wave (SAW) sensor comprising a plurality of quartz crystal sensing components for monitoring a chemical species, wherein said plurality of quartz crystal sensing components is disposed within a cavity formed from a plurality of walls of said acoustic wave sensor, wherein each quartz crystal sensing component of said plurality of quartz crystal sensing components is coated with a differing sensing film; ~~and~~

a plurality of oscillators associated with said plurality of quartz crystal sensing components, wherein each quartz crystal sensing components of said plurality of quartz crystal sensing components is located in a feedback loop with an oscillator of said plurality of oscillators to thereby provide a multiple mode SAW sensor that provides multiple mode frequency outputs thereof; and

a frequency counter that communicates with said plurality of oscillators, wherein said frequency counter is under the command of a processor, wherein a calculated difference among said multiple mode frequency outputs is utilized to promote an increase in sensing accuracy by eliminating responses due to environmental changes other than said monitored chemical species.

20. (Cancelled)

21. (New) The system of claim 19 wherein said sensing components of said plurality of sensing components comprise electrode materials chosen from among a group comprising at least one of the following metals: Pt, Au, Rh, Ir, Cu, Ti, W, Cr, and Ni.

22. (New) The system of claim 19 wherein said sensing components of said plurality of sensing components comprise electrode materials chosen from among a group comprising at least one of the following alloys: NiCr and CuAl.

23. (New) The system of claim 19 wherein said cavity comprises a first channel and a second channel, wherein said first channel is composed of a sensing coating and said second channel is composed of a different sensing coating, wherein said first and second channels are located in a feedback path of two identical oscillators and an output thereof provides the difference of two frequencies produced.

24. (New) The system of claim 19 wherein said sensing components among said plurality of sensing components comprise electrode materials that include at least one of the following metal-nonmetal compounds: CoSi2 and WC.

25. (New) The system of claim 1 wherein said sensing components among said plurality of sensing components comprise electrode materials composed of CoSi2.

26. (New) The system of claim 1 wherein said sensing components among said plurality of sensing components comprise electrode materials composed of WC.